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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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IN RE: EPHEDRA PRODUCTS LIABILITY LITIGATION *
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Pertains to: *
Harbir Singh v. Herbalife International *
Communications, Inc. et al. *
* *

DEPOSITION OF: JOHN FRANCIS DASHE, M.D.

GOODWIN PROCTOR LLP
One Exchange Place
Boston, Massachusetts 02109

April 12, 2007 9:48 a.m. - 1:02 p.m.

KATHRYN K. GIANNO
COURT REPORTER

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I N D E X
WITNESS: JOHN FRANCIS DASHE, M.D.

JOHN FRANCIS DASHE, M.D.,
Deponent, having first been duly sworn, deposes and states as follows:

EXAMINATION BY MR. RHEINGOLD:

Q. Would you state your name for the record.
A. John Francis Dashe.
Q. And your current professional address?
A. Well, I've got two; I work at New England Medical Center which is 750 Washington Street in Boston 02111; then mostly I'm employed by a company called UpToDate, that's one word U-T-D, which is 95 Sawyer, S-A-W-Y-E-R Road, Waltham, Massachusetts. 02453.
Q. My name is David Rheingold and I represent the Plaintiff, Harbir Singh. Are you familiar with that case at all?
A. I am.
Q. And do you understand what you're doing here today at this deposition?
A. I do.
Q. What is your understanding of why you're here today?

A. Well, I'm here to answer any questions you have about the case and about my report.
Q. As part of your answering those questions, it's very important that you give correct answers and truthful answers; do you understand that?
A. I do.
Q. Will you ask me if you don't understand any of the questions that I ask you?
A. Yes, I will.
Q. And I understand that you have given depositions before as an expert?
A. Yes.
Q. In fact, one of those was an Herbalife case by the name of Margaret Parks?
A. That's correct.
Q. I am going to show you what's been labeled at Exhibit 1, which is a deposition notice. Are you familiar with that?
A. Yes.
Q. Do you recall about when was the first time --
MR. OETHEIMER: Just for the record, this is actually a subpoena, and I am not sure we actually got a deposition notice, per se.

MR. RHEINGOLD: Correct, that was a subpoena.
MR. OETHEIMER: Right, but we're here.
A. I'm sorry, what was your question?
Q. Have you ever seen this document?
A. I have.
Q. In response to this document, did you bring documents and materials to this deposition?
A. I did.
Q. Who collected those materials?
A. I collected the materials.
Q. Where were they?
A. At home in my basement, essentially, where I have my office.
Q. What address is that?
A. That's 12 Worthington Street, W-O-R-T-H-I-N-G-T-O-N, in Dedham, Massachusetts 02026.
Q. What I am going to do is go through the documents that you brought and state what they are on the record. And I may seek to get copies or not, but at least everything will be on the record.
A. Okay.
MR. OETHEIMER: We did not make copies of

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materials that I would expect would also be part of your file. If you do want copies, we'll be glad to make copies for you at your expense and send them to you after the deposition. The materials you were sent by Fred McGowen are obviously copies for you.
Q. We have previously labeled Exhibit 2 which is your expert report prepared in this case. And I want you to just take a quick look at that and see if that's a copy of that report and tell the date of that report.
A. Yes, this is a copy of the report, and it's dated February 27, 2007.
MR. OETHEIMER: Dave, I note this is an unsigned copy. I think the signed copy of the report is dated February 27, I just note that Exhibit 2 is an unsigned copy and I haven't verified whether it's exactly the same as the final. You should have a signed final report.
MR. RHEINGOLD: I do have a signed final report, although, I can't make a copy at this point, but we will go through it.
MR. OETHEIMER: Okay.
Q. I'm handing you Exhibits 3 and 4 which are

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your notes. And it looks to me that these are generally identical except one of them has some handwritten notes and another one I've described as being more complete, it's a bit longer.
MR. OETHEIMER: I object to the characterization, but I think there was additional information he'd reviewed. So I agree that Exhibit 4, I think, includes some additional text.
A. So Exhibit 3 has my handwritten notes on the first page.
Q. And how many pages are those notes?
A. There's five page on those notes.

MR. OETHEIMER: Exhibit 3?
THE WITNESS: Exhibit 3.
A. And Exhibit 4 has six pages, so there are some additional notes I had taken. But, otherwise, I believe they are identical, at least the first four-and-a-half to five pages.
Q. With regard to Exhibit 3 while we are here could you just read that handwriting and have that on the record?
A. Okay. On sort of the middle of the paper there are three notes, they each have an arrow. One

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of says, "Med records," which I believe is just medical records; second one says, "Shields" the third one says "Singh"; the next column --
MR. OETHEIMER: Singh is the name of the -- S-I-N-G-H?
THE WITNESS: Right.
A. The next column there's some times, it says, "2:00 p.m." and then "2:47." Actually, it's cut off on the top, so I'm not sure what those last numbers are on the first -- because next to that I've got 37 minutes.
Then it says, "Congenital aneurysm (acquired Berry," B-E-R-R-Y." It's hard to make out what I've got below that, I think it says, "Sometimes rupture." Below that I've written "Smoker - strongest risk factor. Possibly contribution FMD."
Q. Does that FMD stand for anything specific?
A. It stands for fibro-muscular dysplasia.
Q. What can you tell me about the history of these two documents with regard to when each was created?
A. Well, I believe I was taking notes as I went along looking at the medical records, the

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various reports, depositions that I was looking at. I think the longer version, which is Exhibit 4 was probably done a little later when I had read whatever additional information it contains, which it looks like is Zablew deposition, Z-A-B-L-E-W, and the Singh deposition.
So I added some notes from those to my notes on the computer, but I must have printed out an earlier version, which is what Exhibit 3 is. I don't recall the circumstances about these notes.
MR. OETHEIMER: Off the record.

(Off the record.)

Q. I am going to show you what's been previously marked as Exhibit 5 and ask you what that is.
A. Okay, Exhibit 5 is a printout of a number of medical journal articles that I accumulated into a reference manager, which is called EndNote, E-N-D-N-O-T-E, with a capital D and a capital N.
So it's a computer program that allows me to put references into medical articles I am writing, or reports, and renumber them

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automatically. I can move them in and out of the

topics and it will automatically take care of the numbering and the placement of the references and formating.

This is just a list of all of the references that I had accumulated over time looking at this case.

Q. When you say this case, you mean the Singh case?

A. The Singh case. So, if I looked at them on Pubmed, I would put them in the reference manager to use them later if I needed to.

Q. That sounds pretty convenient.

A. It saves time.

Q. Very organized. I'm going to show you what's been previously labeled as Exhibit 6, it looks like a time billing statement, and ask you to just describe that briefly.

A. This is a time tracking statement for the time I've spend on this case up until April 6th.

Q. I'm going to go through what's been presented here as other materials in your file, which we may or may not make exhibits of later.

First, this is a realtime transcript

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for Dr. Shields's deposition, February 20, 2007. Doctor, if anything is inaccurate in my description, let me know. But my assumption will be that my description is accurate and these are in your files.

Dr. Shields's expert report.

MR. OETHEIMER: Do you want to give a date for it?

MR. RHEINGOLD: The date of the report is December 4, 2006. It has a bibliography and a C.V. and a list of court appearances and testimony.

Q. There's a deposition of Dr. Zablew taken on January 10, 2007. There's a CAT scan from May 10, at St. Vincent's Hospital in Manhattan.

MR. OETHEIMER: CAT scan report, just for the record.

Q. There are just -- instead of going through this, there are various films with regard to Harbir Singh taken at St. Vicent's Hospital for his admission from May 10th. And there's also subsequent films from September 19th and September 27th.

MR. OETHEIMER: All of 2003, I assume?

MR. RHEINGOLD: Yes.

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Q. There's four black binders of differing sizes. One is labeled Dashe Supplemental Materials Transcripts, which has a deposition transcript of Vasile, V-A-S-I-L-E, Paniat, P-A-N-I-A-T, and Steve Peterson.

There's another unlabeled binder which has Dr. Shields's deposition transcript dated February 20th. Then there's two binders labeled Dashe Review Materials. They have the same index. The first binder has medical records from St. Vincent's Hospital. The second binder has tabs two through ten, and that's medical records from Alan, A-L-A-N, Hirschfield, H-I-R-S-C-H-F-I-E-L-D.

Tab three is the Plaintiff's Fact

Sheet. Tabs four through six are Mr. Singh's deposition volumes. Tab seven is the deposition transcript for Doina D-O-I-N-A, Caragata, C-A-R-A-G-A-T-A. Number eight is Case Specific Request for Production of Documents and Things. Number nine is Plaintiff's Response to Defendant Herbalife's Production of Document Demand. And ten is Dr. Shields's report, C.V. and testimony list. With all of these materials I only have one copy of your C.V., which I would now like

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to make as the next exhibit, Number 7.

(Exhibit No. 7, Curriculum Vitae for John F. Dashe, M.D.)

Q. I'm now going to show you what has been labeled as Exhibit 7, which apparently is your C.V. I'd like you to take a look at that and see if that's up-to-date?

A. (Witness complying.)

MR. OETHEIMER: If it has "up-to-date," it's up-to-date.

A. It is, it's got my most recent reference, so this is the most recent C.V.

Q. Where do you store your C.V.?

A. It's on my computer, probably at home and at work so I can print it out whenever I need to. I'm not sure which version -- usually, when I update one, I try to get it to the other, but I'm not sure they actually did that this time.

Q. Let's start with your education. You did your undergraduate work at University of Pennsylvania?

A. That's correct.

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Q. What degree did you receive there?

A. Bachelor of Arts.

Q. And that was in 1978?

A. Yes.

Q. And in 1989, did you graduate from the University of Pennsylvania School of Medicine?

A. I did.

Q. And what developed your interest in medicine?

A. I was always interested in science and biology. As an undergraduate, I majored in biology. I then went onto grad school where I was doing research into vision at the level of the brain, the part of the brain that processes vision which is the occipital lobe, the striate, S-T-R-I-A-T-E, cortex. And while I was taking courses and going to seminars, I became interested in medicine and neurology. So that's how I ended up going into medicine.

Q. When you said your interest was in vision, that's human vision?

A. Well, human vision -- the actual research I was doing was experimental; cat vision was the actual model we were looking at to do these

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experiments. It's easier to go do this experiment than it is to experiment on humans, obviously.

But it was more than vision, it was really brain connections and how the brain functions, sort of a more basic level of what my real interest was. In order to chose a research project, you have to do something that's viable. The laboratory where I was working as a graduate student, was basically a laboratory that was looking at the anatomy and physiology of the visual cortex.

Q. So simultaneously while you were getting your medical degree you were also getting a master's degree; is that right?

A. Ph.D.

Q. And that was also at the University of Pennsylvania?

A. It was.

Q. Was there a time between the time you got your Bachelor of Art degree and time you started graduate school?

A. Yes, there was.

Q. And what were you doing between that time as far as academically or employment?

A. For three years I was working as a

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research technician in the research laboratory at the University of Pennsylvania. I was taking some courses, but I wasn't formally enrolled in a degree program at that time; I was working full-time as a technician.

Q. Did any of your post-doctoral training involve strokes?

A. In the Ph.D program are you referring to?

Q. I'm referring to something in 1993 to 1994, Fellow In Stroke and Cerebrovascular Disease.

A. Correct, that was my fellowship program after neurology residency, stroke training program, yes.

Q. And at that time, were you developing interest in studying strokes or treating strokes?

A. By that time I had already decided that strokes was my area of subspecialty interest in neurology. So I was pursuing that interest by further study and training.

Q. When did you decide that was your --

A. Somewhere around 1992, about my second year of neurology residency was the time I was thinking about it. And it must have been during that time that I decided that's where I wanted to

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pursue, because I ended up doing a one-month, sort of an elective course at New England Medical Center in the stroke program.

Q. At that time what was their stroke program?

A. Well, they had a stroke fellowship program under the guidance of Dr. Louis Caplan, C-A-P-L-A-N, and Michael Pessin, P-E-S-S-I-N, and Dans DeWitt, which I think is, D-E-W-I-T-T. So those were the three stroke physicians at New England Medical Center.

And as part of the fellowship, the one-month elective course was essentially going around and seeing the strokes with the physicians there and the current fellows who were there at the

time, which I think was April 1992, or maybe it was May, but it was around that time.

After residency I did a formal one-year fellowship which began in June or July of 1993 and went to '94. Essentially, I was the stroke fellow at the New England Medical Center. I was the first sort of contact person to take care of strokes that would come in either through the emergency room or would be called as consults because they happened

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in the hospital. I would see and evaluate the patients. I would present them to one of the attending senior physicians. We would review the case, decide how to manage it. That was really a hands-on learning experience.

As part of that fellowship, I was also rotating through Spaulding Rehabilitation Hospital four half days for week on the stroke rehabilitation.

Q. Did there come a time when you got academic appointments?

A. Yes.

Q. When was that.

A. Well, my first full-time academic appointment after completing the fellowship was I started in August 1994 at the Beth Israel Hospital, which later on became Beth Israel Deaconess Medical Center in Boston on Brookline Avenue.

Q. Do you have a general interest in teaching?

A. It's not my primary interest. As any physician who's in an academic center, there's teaching involved, which happens on rounds. And in addition to that, even to this day, I do teaching as

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part of the neuroscience course in Tufts University which runs in the fall. So I present to one of the small group sessions there.

Q. Your C.V. has some positions where you received research funding and you put down your titles as Local Principle Investigator. What is a Local Principle Investigator?

A. Generally a Local Principle Investigator is an investigator who enrolls patients into a multicenter clinical trial of a drug for a pharmaceutical agent that's being tested or in development.

So often times -- there are many, many such centers. There's a Primary Principle Investigator who actually runs the trial, and then every hospital has a designated investigator who is enrolling patients into the trial and may or may not have some administrative responsibilities along with that.

Q. When you were the Local Principle Investigator, does local connote one hospital or does it connote a city?

A. One hospital, essentially. At the time it was Beth Israel Hospital. In fact, if I recall

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correctly, in many cases there were several Local Principle Investigators who could enroll patients into these trials. So Beth Israel at the time, I

was not the only Local Principle Investigator on some of those trials. There were other stroke physicians at the hospital who were doing the same thing as part of those studies.

Q. Who approached you with regard to enrolling patients?

A. I am not sure I understand your question.

MR. OETHEIMER: Do you have some particular -- because there were a number of studies?

Q. Yes, my question is: Were you approached directly by the drug company, or by the primary physician who was running the entire trial?

A. In most cases that I can recall, because I was not actually the senior person on the stroke service there -- well, in a sense I was, but Dr. Steven Warach (phonetic) was part of our stroke service and was the person who actually interacted directly, more or less, with the pharmaceutical companies.

And generally, it wasn't the

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pharmaceutical company, it was the program that was sort of managing the trial. We would contact them, they would set you up as a center, contracts would be signed, and I would enroll patients into the trial if such patients were available.

Q. Did you have any other duties other than enrolling patients?

A. Again, your question is very broad. Do you mean at the hospital?

Q. When you were involved as a principal investigator for certain drug trials.

MR. OETHEIMER: Any other duties with respect to the trial?

Q. Yes, I mean, I don't want to run on and ask you a compound question. But did you look at medical records after they were taking the drug? Did you do any type of medical analysis or statistical analysis?

A. I see. No, my role was essentially taking care of them while they were in the hospital. So any patient that came into the hospital with a stroke, if I was involved in their care, they were eligible for the trial, I would try to enroll them in the trial. Most of these trials were placebo

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controlled; so I didn't know and the patient wouldn't know if they were going to get the active compound or the placebo. We would explain that up front to them or to their family or designated guardian.

If they enrolled, then I would take care of them just like I would any other stroke patient in the hospital, watching them day-to-day. We had a stroke nurse who would take care of most of the paperwork associated with these trials. And I would generally oversee their medical care while they were in the hospital. I might see them again as an outpatient for evaluation either as a routine part of our evaluation or as a specific part of follow-up for the clinical trial.

Q. And you were also blinded to the drug?

You did not know if it was the placebo or the --
A. Right.
Q. And then on the back end, after patients were released from the hospital, you didn't have any part in reviewing medical records, did you?
A. Not as part of the clinical trial, I had no part in data analysis. Again, I would see patients if they came in as a follow-up visit. Some

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of the trials we were required to do blinded at follow-up, so I might not have been the person who actually saw the patient in follow-up because I would know their hospital course. I didn't know what drug they got in terms of the actual agent under investigation, but I knew what happened in the hospital.

So I think at some point many of these patients saw someone who did not know them as part of their follow-up. That person would then be the so-called blinded assessor who would evaluate them after the stroke, at 30 days, 90 days, whatever the time period was.
Q. I see. With regard to your bibliography, do any of these published materials involve the product ephedra?
A. No, they do not.
Q. Do any of these articles involve any sympathomimetic drugs?
A. It's my recollection none do, at least not in terms of the primary or secondary outcomes or as part of the analysis.
Q. Are you a Board Certified Neurologist?
A. Yes.

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Q. Do you have any subspecialty in that field?
A. My subspecialty is stroke and cerebrovascular disease.
Q. Does that require any special testing? Or do you just say, "My specialty is stroke"?
A. The stroke specialty has a new test, sort of an accreditation procedure which has just come into play in the last few years. I think the first year it was given was probably 2005 or 2006, I can't recall right now.

So, yes, in that sense it does. But up until recently, it had not. You do a stroke fellowship under a trainer and you are considered to have a subspecialty in stroke.
Q. Is that stroke fellowship something part of this new accreditation?
A. The new accreditation requires that you have a stroke or cerebrovascular fellowship as well as passing a new written examination.
Q. Do you have -- have you taken that accreditation test?
A. No, it's not offered this year. I'm likely going to take it in 2008.

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Q. Do you consider yourself an expert in epidemiology?
A. An expert? No.
Q. Do you consider yourself an expert as a

statistician?
A. No.
Q. Briefly describe for me what UpToDate, Inc. is.
A. UpToDate is a company that is essentially an electronic reference information source for physicians or for practitioners of medical care. It's an oversimplification, but one way to think about it is it's an online or electronic version of a textbook for medicine. It's actually an oversimplification because the term "UpToDate" implies that we keep it up-to-date, which means it's constantly undergoing new vision and updating as the medical journals and articles and information comes out. That the basic idea.
And UpToDate is now developing different specialties in addition to those that it already has in internal medicine; one of those is neurology, which is why I am working for them now.
Q. How do doctors access the information on

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this site?
A. They can buy a personal subscription; that's one way. The second and more common way now is that many institutions, academic medical centers, even community hospitals will purchase an institutional subscription and have it available on the hospital computer internet system so other physicians who are working in the hospital or nurses or other practitioners can use the information.
Q. When did you get hired by them?
A. I started working there in January, end of January 2004.
Q. What is your job title with them?
A. My job title is Deputy Editor of Neurology.
Q. Do you have any ownership interest in this site?
A. I have stock options. And I think I own, now, as of last year, something like 100 shares, maybe 200 shares of their stock. So it's a miniscule percentage of the overall company, miniscule amount of funds in that sense.
Q. Might add up to something someday?
A. Maybe.

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Q. Goggle-ize it.
A. Right.
Q. As your job as Deputy Editor, what do you do?
A. Well, because neurology is a new specialty, most of my time is spent editing new topics that authors have submitted on topics in neurology. So we will recruit authors to write a topic. We have a table of contents that we have outlined where we have a list of all the topics. We think we need to have a relatively complete neurology section.
We have designated section editors who are specialists in various areas of neurology who are overseeing recruitment of the authors. The authors then write topics which they submit to us. My job is to edit them and put them in the proper

editorial style and organization and formating for our program. That's probably more than half of my time.

The rest of my time there I spend updating current content in neurology. And the way I do that is to review neurology journals that come out, or other journals that have neurology topics within them. And if they are pertinent to our current content, then I will change the content based on the new information in the medical journals.

MR. OETHEIMER: Might I just interject, and, Dr. Dashe, you -- I assume that you're comfortable giving these answers and there's nothing confidential or proprietary to your employment with UpToDate.

But let me caution you, if you think there are trade secrets or anything that's proprietary for UpToDate, this record -- I mean, this is a public proceeding. The transcript is subject to be filed with the court. So, I don't want to get you in trouble with your employer.

We can talk outside if you feel that the questions are straying to an area that you believe are sensitive. If you think it's not an issue, I am happy to have you answer Mr. Rheingold's questions about it.

A. Okay.

Q. Are there any articles in the neurology section which discuss ephedra and strokes?

A. In the neurology section of UpToDate?

Q. Yes.

A. I'm sure that we have a reference to the Morgan Stern article from 2003 and one or more than one of our UpToDate topics regard stroke. Probably on the topic on hypertension, intracerebral hemorrhage. It may also be in one of the topics that discusses subarachnoid hemorrhage. Other than that, I don't think there's any other references that I am aware of.

Q. What other positions do you have at this time as far as your professional career?

A. Well, I am a staff neurologist at New England Medical Center. And I have an appointment there as an Assistant Profession of Neurology at Tufts Medical School, which is affiliated with the New England Medical Center.

Q. What do your duties entail with regard to being a staff neurologist?

A. Well, I see patients in the hospital when I am on service. I take care of neurology patients in the hospital who come in either through the emergency room or directly to our service, or through our consults, patients that we see because some other service asked us to see them in consultation for some neurologic problem.

Q. And this is much more broad than just seeing stroke patients, right?

A. Yes, it's stroke patients and general

neurology patients; essentially, every neurology patient in the hospital.
Q. I notice on your C.V. that you were Co-director of the Comprehensive Stroke Center at the New England Medical Clinic?
A. I was the Co-director of the Comprehensive Stroke Center at New England Medical Clinic until 2004 when I started working for UpToDate.
Q. What did your duties entail as far as being the co-director of that?
A. Again, the stroke service is organized as sort of a subportion of the neurology department. So my duties were to make sure that stroke patients were taken care of in a timely.
We would an acute stroke system to take care of people who come in who might need urgent treatment. So my main duty was to carry the stroke pager and to respond urgently if I was oncall if a stroke patient came in and it was a code

stroke. So I would go see the patient, evaluate them, see if they were eligible for some acute treatment such as TPA. Or, if we had a trial going on, if they were eligible for an acute nerve-protective agent trial or some other drug. Essentially, that was my duty as the co-director.
We also had a stroke nurse and, at least in theory, had some administrative duties. But in reality, it was the department chairman who had final say with everything.
Q. Final, final say, apparently. Have you ever had a private neurology practice?
A. No, I have not.
Q. Have you ever performed any surgery?
A. No, I have not.
Q. Have you consulted with attorneys before with regard to ephedra claims?
A. When you say consulted with attorneys, could you be more specific?
Q. Have you ever been asked to be an expert witness to testify that someone with a lawsuit had injury caused by or were not caused by ephedra?
A. No, not to my knowledge.
MR. OETHEIMER: Yes, other than -- I'm not

sure he understood the question. Are you asking about has he severed as an expert witness for Herbalife?
MR. RHEINGOLD: Yes.
Q. Have you ever been an expert for Herbalife?
A. Yes, I have.
Q. And what was your understanding of Herbalife? Is that a company?
A. As far as I know it's a company.
Q. Do you know their company name?
A. Their corporate company name?
Q. Yes.
A. Other than Herbalife, no, I don't.
Q. Do you know where they are located?
A. I may have known at one time, I can't recall.
Q. Have you ever had any contact with

Herbalife employees directly?
A. No.
Q. As we sit here today, do you know if Herbalife is still an existing company?
A. I believe it is. I don't have any direct knowledge.

Q. Do you know what products they have on the market now?
A. Currently, no, I don't know.
Q. Can you describe for me their general business?
A. Not really. I mean, other than I know they made Herbalife products that contained ephedra, that's sort of where my knowledge about Herbalife ends.
Q. Do you know if in the United States they are selling products that contain ephedra?
A. Do you mean currently?
Q. Currently.
A. I don't believe so. I mean, ephedra has been withdrawn, so I don't think they are.
Q. So to the best of your knowledge there's no ephedra products on the market in the United States at all?
MR. OETHEIMER: Objection.
A. To the best of my knowledge. It's not something I've investigated, but to the best of my knowledge.
Q. Do you know if Herbalife is selling any ephedra-containing products in any other countries

as we sit here today?
A. I don't know.
Q. Have you been employed as an expert witness with regard to ephedra and Herbalife by Goodwin Proctor?
A. I don't know if employed is the right word; I've been retained.
Q. When was the first contact you had with that firm?
A. I believe it was in 2003.
Q. How was that contact made with you?
A. I don't recall the details. At some point counsel Richard Oetheimer must have called me on the phone or contacted me in some way.
Q. Have you -- what was the conversation you had with him?
A. I don't recall the details of the first conversation.
Q. Did you have a second conversation with him?
A. I've had -- in the intervening years, there's been multiple conversations with him about various things. But I don't remember specifically the conversations I had in 2003.

Q. Through these initial conversations, did he ask to retain you for your services?
A. I'm sure he did, yes.
Q. And did you agree to do that?
A. Yes.
Q. Have you agreed with any other attorneys

to be retained as an expert at any other firm?
A. Not with regard to Herbalife or ephedra.
Q. What have you been retained for? What type of litigation?
A. There was one case where I was retained as a physician who -- I was a treating physician, but I was also retained as an expert witness in the Tang Estate, T-A-N-G, Peter Tang.
Q. Just briefly, what did that involve?
A. It was a patient who I had seen in the hospital at New England Medical Center who had a stroke. And my recollection was he was an older man in his 70s who had been a professor of political science at one of the local universities, I can't recall which one.
So, he had a stroke, the time he came for a stroke, we felt he also had an underlying dementia which was possibly or probably Alzheimer

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disease that was a preexisting condition prior to the stroke. So I took care of him and he did okay from the stroke. Then a year or two later, I was contacted by a law firm and I was told that the woman who had come to see me with him, who had represented herself as his daughter, was, in fact, his wife, or they had been married unknown to the rest of the family.
In the meantime, he had died, she was claiming that she was entitled to his estate, and the surviving sons, family members, were disputing that; they thought the relationship was duplicitous in several ways. That was essentially the nutshell of the case.
Q. That sounds more exciting than ephedra.
MR. OETHEIMER: Do you want to add -- what were you asked to testify about?
A. I was asked to testify as an expert that he had underlying dementia, essentially, which was my belief in any event.
Q. If you were approached today by a law firm to be retained as an expert in a case, would you consider that possibility?
MR. OETHEIMER: Objection.

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A. Other than Goodwin & Proctor, I would not consider it.
Q. Why is that?
A. Mainly, it's I don't have the time to do it.
Q. Prior to your first contact with Goodwin Proctor, what was your knowledge with regard to ephedra?
A. Other than the -- let's see, 2003, I don't think there was -- I was probably contacted around the time the Morgan Stern article had come out. But other than that, I don't recall that I had any prior knowledge of ephedra except that it was an ingredient in Ma Huang. And the only reason I knew that was because, having worked at New England Medical Center in Boston where there's a large Chinese population, Ma Huang was one of the things that Chinese patients often took, among other Chinese herbal medicines.

Q. Have you ever taken ephedra?
A. No, I've not.
Q. When I use the word "ephedra," to me it's the same thing as Ma Huang. Is that okay with you?
A. Sure.

Q. Have you thought of them as different?
A. Well, I think Ma Huang has other ingredients, but ephedra is the main active, ephedra alkaloids, ingredient.
Q. How did you become aware that Chinese patients were using Ma Huang?
A. I became aware during the stroke fellowship at New England Medical Center. We knew Chinese patients didn't often take Western medicines they were prescribed, they often took their own herbs and supplements.
Q. What were some of the uses that Chinese patients were making of the Ma Huang?
A. I honestly don't know what the rational is behind why they take it, what they use it for. I don't honestly recall. I may have never known, it's just something that they did.
Q. Turning your attention to Exhibit 6, which is your time billing, did you create this document?
A. I did.
Q. And where is it located now, electronically?
A. On my computer at home.
Q. I note that the first date on here for any

activity is January 22, 2007; is that correct?
A. Yes.
Q. With regard to reviewing the medical records, when was the first time you had contact with Mr. Oetheimer with regard to the Singh litigation?
A. Well, it was prior to January 22 because by then I had the medical records in my possession. I don't remember if it was earlier in January or in December. We must have talked on the phone and he must have asked me about reviewing the case and said he would send records. But the exact date of that, I don't know. It could have been earlier than that.
Q. Prior to 2007, how many Herbalife ephedra cases had Mr. Oetheimer consulted with you on?
A. I think there are probably in the range of seven, six or seven, something like that.
Q. Have you consulted with any other attorneys at his firm with regard to Herbalife ephedra cases?
A. No, I've not.
Q. Have you discussed Herbalife ephedra cases with any other staff at this firm?
A. At one time there was a nurse who worked

for the firm; his first name was Tom. And, unfortunately, he passed away a year or two ago. But I think I had discussions with him. He would sometimes send me records on some of those cases.
MR. OETHEIMER: For what it's worth, Tom Dombkowski pass away in late 2004.
Q. Are any of the Herbalife cases still open,

to your knowledge?
A. Yes, I believe so.
Q. Are those cases in litigation?
A. Well, I guess if they were still open they would be in litigation, same thing in my mind, yes.
Q. Which cases are those?
A. Margaret Parks case, Harbir Singh, obviously, and Pamela Alan.
Q. What injury does Pamela Alan allege?
A. Pamela Alan alleges subarachnoid hemorrhage, alleges she had a subarachnoid hemorrhage.
Q. Have you given an expert report in that case?
A. Yes, I have.
Q. Have you given deposition testimony?
A. Yes, I have.

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Q. Is there a trial date set?
A. Not to my knowledge.
Q. Is there a trial date set for Margaret Parks?
A. Not to my knowledge.
Q. Have you ever testified in court with regard to Herbalife ephedra case?
A. No, I have not.
Q. Is it your understanding that you might be called to testify as an expert?
A. Yes.
Q. Are you willing to do that?
A. Yes.
MR. RHEINGOLD: For the record, the Alan deposition is not noted in the Singh report, I think it post-dated the report.
Q. Returning to the billing statement, what did you discuss with Mr. Oetheimer whenever it was he first told about this case?
A. Again, I don't recall the details, so I would be guessing. But I'm sure he told me the outline of the case and that he would send me records.
Q. When did you first have -- strike that.

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Have you asked for any materials which you haven't received with regard to the Singh case?
A. The only thing I've asked for and have not received is the original CT scan of the brain from the date of the stroke, which was May 10, 2003. There was a CT scan done early afternoon, which I have the report, those films apparently haven't been located by the hospital.
Q. Why did you ask for that?
A. Well, I just wanted to see what the initial films looked like prior to the procedure. The films that I have, which are here, are all sort of during or post procedure, so there's artifact from the coils on the CT scan.
I don't think it would changed my opinion at all to have seen the original film, I've got a description of what it looked like, subarachnoid hemorrhage; but it's nice to see the original film.

Q. Do you have any training in radiology?
A. No formal training in radiology, but it's part of the stroke fellowship and part of the neurology residency. We look at brain films, CT

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scans, MRI, continuously. Many of our patients, perhaps most, have brain imaging at some point during the course of their neurologic evaluation.
Q. So you feel comfortable reading films?
A. Yes, I feel comfortable reading brain CT and MRI scans.
MR. RHEINGOLD: If anyone needs a break, let me know.
MR. OETHEIMER: Why don't we take a couple minutes.

(Off the record.)

Q. With regard to Exhibit 2, which is your expert report, is that what you consider a final version of that report?
A. Well, I signed the final version, but I believe this is just a copy of that, yes.
MR. OETHEIMER: Do we know that?
Q. Well, my line of questions is going to be, have you made any changes to that report since you've made it?
A. No.
MR. OETHEIMER: The answer is no, if it's

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the final report. I just want to know if it is what we had on the computer, that it's that. I probably --
MR. RHEINGOLD: I have no reason to believe it's not the final.
A. I believe it is.
MR. OETHEIMER: You know what, this is signed and it's better typing. So do you want to --
MR. RHEINGOLD: I keep on looking at mine which is signed, so I'm thinking it's that.
MR. OETHEIMER: If you want, I can make a copy, or do you want to mark the signed copy; I would just feel better.
MR. RHEINGOLD: Yes, I am sorry for the confusion.
Q. Does Exhibit 2 represent your final report in this matter?
A. Yes.
Q. Have you made any changes since then?
A. No.
Q. Are there any changes that you envision making at this point?
A. Well, if new information becomes available

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that's different than what I have here there, that would be one circumstance where I might want to change it.
Q. But at this point you don't --
A. At this point I don't have any other information than what I had.
Q. I note from your billing statement that there are notes that say "draft expert report" for

February 18, February 19, February 20, and February 22, 2007; is that correct?
A. That's correct.
Q. What does that mean, "draft expert report" on the time and billing statement?
A. It means I was working on this document, essentially. Nothing more, nothing less.
Q. When did the report become a final version that it is right now?
A. Well, it looks like February 26th I have Revised Finalized Expert Report signed on the 27th; so, either the 26th or 27th. I guess it's not really final until I put my signature on it, which was on the 27th.
Q. Does Mr. --
A. I'm sorry, I made a mistake. It's signed

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the 26th, so that was the final date.
Q. Did Mr. Oetheimer see any versions of this before the final report?
A. I suspect he did, yes.
Q. And when was the first time he saw any draft of this?
A. I don't know precisely. It would have been probably around -- you know, again, I'll be guessing, somewhere around the 18th and the 22th I would imagine he had seen a version. But I don't remember exactly when it was.
Q. Who actually did the typing of this report?
A. I did the typing.
Q. Where were you when you did that?
A. At home at my computer.
Q. Was any of this language taken from reports you had previously written?
A. Well, the qualifications are essentially the same, so the first few paragraphs. And there may be very similar language in some of my other reports that involve, or one of my other reports, that involves a patient with subarachnoid hemorrhage regarding the mechanism whereby smoking may cause

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vascular injury.
Q. As part of your report starting on page seven, there's a list of references; is that correct?
A. Yes.
Q. Who was responsible for collecting these references?
A. I was responsible for collecting, I think, almost all these references.
Q. Were there some you think you didn't collect?
A. I'm looking at the list right now. It's possible counsel may have directed my attention to reference 27, which I then included in the report. Other than that, these are essentially references that I found or had or had known about.
Q. What is an ephedra extract?
A. Ephedra extract is something extracted from the ephedra medication.
Q. What is ephedra?
A. Ephedra is a mixture of a number of

alkaloids, usually dried from Ma Huang. But there's ephedrine and pseudoephedrine in sort of 95 percent of what's in, what we consider to be ephedra, at

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least in the Herbalife, the ones that I know about, the supplements. There are some others that are also in there that make a very small percentage of the ephedra alkaloids.

Q. Do you know what the other ones are?

A. There's ephedra pseudoephedrine, that's 95 percent. Then there's methalephedrine and methalpseudoephedrine, norpseudoephedrine. I may have missed one, but I think that's the majority.

Q. What is Ma Huang?

A. Mawan is essentially a plant that grows, I think it's native to China. And one of the ingredients of Ma Huang, one of the constituents, I suppose, is ephedra alkaloids.

Q. How does the Ma Huang plant actually become a tablet used by Herbalife?

MR. OETHEIMER: Objection.

If you know.

A. I don't know the specifics of that at all.

Q. We have touched earlier on what you believe to be your first exposure to ephedra, being your Chinese patient population. Other than that experience and any research, which we'll discuss with regard to being retained as an expert, have you

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had any other exposure to ephedra?

A. In terms of patients I've taken care of?

Q. Yes.

A. No, I've, to my knowledge, never encountered anyone that I recall who had used ephedra. Maybe they used it and I did not know about it, but not to my knowledge.

Q. Have you ever done general research on ephedra?

A. When you say general research, can you be more specific?

Q. Have you ever done any research about the plant Ma Huang?

A. Other than looking up articles on the internet through Pubmed, the international library of medicine, I have not done any specific research on ephedra or Ma Huang.

Q. With regard to what I will call academic research with regard to ephedra, what have you done?

A. Again.

MR. OETHEIMER: Are you distinguishing between the research he's done for purposes of serving as an expert witness, or something -- When you say academic research, I'm not sure.

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Q. For the purpose of your own knowledge or being retained as an expert, what literature have you looked at?

A. Well, the bulk of it is in those articles I supplied you as part of the reference manager; essentially, most of what I've looked at is there. I suppose I've come across references to ephedra in textbooks at some point or another, but I can't recall anything specific about that.

Q. Do you know the product -- do you know the Herbalife product that Mr. Singh was using?
A. Well, I think the one that contained ephedra is the product called Original Green.
Q. Where did you get that information?
A. Well, he talked about using green and beige tablets in his deposition.
Q. With regard to your retained work with other Herbalife cases, what Herbalife ephedra productions were they allegedly using?
A. Original Green is the only one I have recollection of. So I think that's all I can say.
Q. Have you ever physically personally seen a bottle of Original Green?
A. No, I've seen copies of labels. I've not

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seen the bottle.
Q. With regard to this specific action, have you seen a label for the product?
A. At some point, I'm not sure if it was this case or other cases, I've seen various labels of Original Green.
Q. Do you have -- did you ever receive a copy of a label that you kept in your possession?
A. I don't think I've kept any in my possession, but I have received copies of labels.
Q. Do you know when Herbalife first started using ephedra in their products?
A. I don't know.
Q. What is the recommended dosage on Original Green?
A. My recollection is that it's two to three tablets twice a day.
Q. Do you know if they recommend a certain time to take those tablets?
A. They do, and I am not sure if I recall exactly, but something like 10:00 a.m. to 2:00 p.m. or 10:00 a.m. and 4:00 p.m., something like that.
Q. Do you know how much -- let's see, do those tablets contain ephedra alkaloids?

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A. To my knowledge, the Original Green tablets, yes.
Q. What is the amount in milligrams for each tablet?
A. Well, the label says three tablets have 21-milligrams; so, one tablet has 7-milligrams.
Q. Are you aware that Herbalife employees have been deposed?
A. I'm not aware.
Q. So it's fair to assume you haven't read any copies of depositions that Herbalife employees have given?
A. That's correct.
Q. Do you know if Herbalife has ever conducted any efficacy studies in regard to any of their ephedra products?
A. I'm not aware of any studies they have conducted.
Q. Have you ever asked if they have conducted any efficacy studies?
A. I've never asked.
Q. Are you aware of any efficacy studies done

with regard to ephedra, done by anyone at any time?
A. There was some articles in the literature

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that I've looked at the effectiveness of Herbalife or other ephedra-containing products for weight loss.
Q. Do you know why Mr. Singh was taking the Original Green?
MR. OETHEIMER: Objection.
A. I don't remember he ever stated explicitly; I assume it was for weight loss.
Q. Do you know what Herbalife represented Original Green was for?
MR. OETHEIMER: Objection.
A. From reading the depositions in this case, weight loss was one of the uses for Herbalife.
Q. Are you aware of any other uses?
MR. OETHEIMER: Objection.
A. I remember reading in one of the depositions, whether this was Herbalife or the distributor, whose name was Peterson, something about increased energy. I'm not sure what that means exactly.
Q. As we sit here today, do you personally have an opinion whether ephedra use can result in weight loss?
MR. OETHEIMER: Objection, it's outside

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the scope of the opinion he's been retained to give and designated with respect to.
THE WITNESS: But I can answer?
Q. Yes.
A. My opinion is that I don't know. It may be possible to lose some weight short-term. I don't think any of the weight loss products that have ever been studied have been effective in terms of long-term reduction, or any of the other weight loss strategies, including diet.
Q. Do you know if Herbalife conducted any studies with regard to safety in using any ephedra products?
MR. OETHEIMER: Objection.
A. I don't know any of the specifics of those.
Q. Is that something you asked for?
A. No.
Q. Do you know if Herbalife conducted any studies with regard to the metabolism of ephedra in their products?
A. I have no specific knowledge of those studies.
Q. Have you asked to see those?

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A. No.
Q. Do you know what AER is?
A. AER would likely be Adverse Event Report, something like that.
Q. In your practice as a doctor, have you ever filled out any of those?
A. No, I've not.
Q. Do you know if --
A. I should qualify, with the exception of clinical trials where we sign off on any adverse

event that happens to any patient who's in a trial. They fall out of bed, they get a clot in their leg, deep veinous thrombosis, infection, essentially, anything that happens in the hospital that goes wrong, any complication is often reported to the study coordinator and administrator.
So in that sense, I've probably signed off on some of those things; but in terms of filing a report on my own, no.
Q. Do you have any knowledge of Herbalife receiving any adverse event reports for serious injuries associated with the use of their ephedra products?
A. I have no knowledge of that.

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Q. Have you asked anyone if those do exist?
A. I have not asked.
Q. I'd like to turn your attention to the report, specifically page six. You have a section called Summary of Opinions. What I'd like to do is walk through these, fairly quickly, to establish that these are your opinions, and then I'll go more into detail for each opinion.
Number one is on May 10, 2003, "Mr. Harbir Singh suffered a subarachnoid hemorrhage due to rupture of an intracranial left internal corroded artery bifurcation aneurysm." Is that still your opinion today?
A. Yes. No, that's the facts of the case.
Q. Number two is, "It is my opinion that this formation of the left internal corroded intracranial bifurcation aneurysm as well as rupture of the aneurysm with subarachnoid hemorrhage, is directly attributable to Mr. Singh's history of cigarette smoking, which is, above all, the most important risk factor for aneurysm formation and rupture."
When you say in the first line there that the formation of the aneurysm, what do you mean by that?

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A. Formation is the aneurysm develops, it forms.
Q. Is it your belief that Mr. Singh did not have in aneurysm when he was born?
A. I don't know if he had the aneurysm when he was born. It's possible he may have.
Q. When you say at the end of that sentence, now you're referring to his history of cigarette smoking, "which is, above all, the most important risk factor for aneurysm formation and rupture," is that a general statement, or is that with regard to Mr. Singh, that it's the most important risk factor?
MR. OETHEIMER: Objection, compound.
A. It's a general statement in the sense that it is the most important risk factor for this condition. And in the specific instance for Mr. Singh, I believe it was his most important risk factor.
Q. Also number two says, "It is also possible that a condition known as fibro-muscular dysplasia may have played a role in causing the aneurysm to develop and eventually rupture." Is that still your opinion?

A. Yes, it is.

Q. Do you hold that opinion within a reasonable degree of medical certainty?

MR. OETHEIMER: Objection.

A. Well, the only way I can hold that opinion is based on the interpretation of the angiogram from Dr. Zablew who believed that he may have had fibro-muscular dysplasia because he saw some dysplastic segment of the extracranial cervical portion of the left internal corroded artery at the time he did the angiogram.

Q. Are you aware of anything in Mr. Singh's chart, a finding of dysplasia of whatever nature at the bifurcation where the Berry aneurysm was?

A. Well, the aneurysm itself is sort of dysplasia, but in this case it's not the same as definitely related to fibro-muscular dysplasia.

Q. Number three, "The available scientific evidence does not support the notation that the amount of ephedra alkaloids in the Herbalife product caused clinically important hypertension or vasospasm or vasoconstriction of intracranial arterial vessels; nor is there evidence that the ephedra alkaloids played any role in the growth or rupture of Mr. Singh's secular aneurysm." Is that still your opinion today?

A. Yes, it is.

Q. When you refer to the available scientific evidence, what is that you're referring to?

A. Well, it's the literature and published reputable peer-reviewed journals that have addressed this question regarding the possible relationship of ephedra alkaloids with hypertension, vasospasm, vasoconstriction, et cetera.

Q. What is your definition of hypertension as you use it there?

A. I say clinically important hypertension.

Q. That's a good point, what do you mean by clinically important?

A. I mean, clinically important means it has potential to cause problems, complications because of the severely or duration, or both.

Q. So in the sense -- how do you define clinically important hypertension then?

A. I define it if there had been evidence that there was hypertension that resulted from the use of ephedra that had been linked conclusively in the peer-reviewed journal article with aneurysm rupture or formation or other problems in the intracranial vascular circulation.

Q. The use of hypertension, does that include acute and chronic?

MR. OETHEIMER: Objection. Hypertension or clinically important hypertension?

MR. RHEINGOLD: Clinically important hypertension.

A. Yes, I believe it includes acute and/or chronic.

Q. Is there any evidence you've seen that Mr. Singh has had chronic hypertension?

A. The only evidence we have from Mr. Singh's case is the blood pressures that were reported while he was in the hospital. I don't know of any blood pressure recordings prior to that.
Q. Can you define your use of clinically important vasospasm?
A. Clinically important would mean that it caused problems related to the blood vessel. So if it was transient, temporary or mild, we wouldn't expect there would be any problem related to it.
Q. The same thing for vasoconstriction?
A. The same thing for vasoconstriction.
Q. As you use vasospasm and vasoconstriction,

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do you see a difference?
A. I personally think they are relatively synonomous. I know some people consider one to be more acute and the other to be more chronic. I am not sure that distinction is important or consistent in the way those terms are used in the literature.
Q. For the purposes of this deposition then, you're going to use them interchangeably?
MR. OETHEIMER: Objection.
A. I think they have the same meaning.
Q. The beginning there of paragraph three, did we also discuss what you believe was the amount of ephedra alkaloids in the Herbalife product?
A. Yes, we did.
Q. What is your understanding of the history of his use on May 10, the day of the stroke?
MR. OETHEIMER: Mr. Singh's?
MR. RHEINGOLD: Yes.
A. My understanding is he did not use anything in terms of ephedra on May 10th.
Q. What was your understanding about his use of Herbalife on May 9?
A. Well, he had testified at his deposition that he took Herbalife for about a year; so, he

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probably did use it on May 9, if that's correct.
Q. Do you know the dose he used on May 9?
A. I think he said he was using -- it's in his deposition, but I think it was something like three green and one beige twice a day.
Q. Other than the ephedra alkaloids, do you know what were in the green pills, what ingredients?
A. There's a small amount of -- in terms of activity ingredients, there's a small amount of caffeine.
Q. Do you know the amount?
A. I think it's one-milligram in each tablet or pill.
Q. Is the amount of caffeine in the product relative in any way to your opinions here today?
MR. OETHEIMER: Objection.
A. Is it relevant? Again, I don't think the caffeine is enough to cause any significant clinically important hypertension, vasospasm, vasoconstriction.
Q. Do you know or not know if there's any synergetic effect with the defined use of caffeine and ephedra alkaloids?
MR. OETHEIMER: Objection.

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A. When you say synergetic, is that just in reference to what particular --
Q. Catecholamine release?
A. You mean indigenous catecholamine release from neurotransmitters?
Q. Yes.
MR. OETHEIMER: Foregone, object to all of that.
A. I don't know what happens at the neurotransmitter level specifically with caffeine in terms of synergy with ephedra, if that was your question.
Q. Yes, that's the answer. With regard to paragraph four, "The records in this case, specifically the cerebral angiogram of May 10, 2003, revealed there was no evidence of vasospasm or vasoconstriction in Mr. Singh's intracranial arteries. This, too, argues against any hypothesized role of ephedra in the etiology of the aneurysm growth and rupture." Is that your opinion today?
A. Yes, it is.
Q. Did you make an independent finding there was no vasospasm or vasoconstriction on that?

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A. I looked in the films, the arteriogram and the angiogram he had done at the time of the procedure when they went to coil the aneurysm.
Q. So your conclusion about the lack of vasospasm and vasoconstriction is based on your own review of the films as well as confirming it, I assume, with what Dr. Zablew said?
A. Yes, I looked at the films and his cranial vessels are smooth as silk. There's no evidence of any kind of constriction that would suggest, vasoconstriction that would suggest vasospasm.
Q. With regard to the films that you looked at, how wide does the blood vessel have to be in order for it to appear radiographically?
A. Are you referring now to the angiogram?
Q. Yes.
A. Well, you can see blood vessels that are very very small on a good contrast dye angiogram, a millimeter. I'm not sure what the limit of resolution is of the dye and the human eye to detect vessel, but you can see pretty small vessels.
Q. But there's vessels that exist then on this film you couldn't visualize?
A. There are always tiny perforating vessels

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that are not individually visible on any kind of angiographic study.
Q. With regard to the angiogram, I believe that was taken at 3:48 in the afternoon. Does that seem about right?
A. Yes, that sounds about the right time, late afternoon at some point.
Q. There was no angiogram taken before that with regard to this incident that you're aware of?
A. No, there wouldn't have been time. I mean, he came into the hospital that day. To get an angiogram going it takes a little time. The CAT

scan was early afternoon, 1:00, 2:00, the angiogram followed a few hours later.
Q. You're not aware of any of angiograms that were done on, let's say, May 9th, the day before?
A. Clearly, he wasn't in the hospital on May 9th, so there's no indication to do an angiogram on that day.
Q. As far as you are aware, there's no way of knowing if any of his vessels were in spasm on May 9th?
MR. OETHEIMER: Objection.
A. One can conclude from looking at the films

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on May 10th that there was no chronic or persistent vasospasm, other than that --
Q. What is your understanding of what chronic vasospasm is, because you just used it?
A. I'm not sure there is such a thing as chronic vasospasm. I'm using that because it's been implied by other reports in this case. But I think most cases where there is vasospasm there's usually transient, or if it's constricted permanently then all the vessels would appear to be constricted, and that would be hard to tell on an angiogram.
But these vessels on this angiogram look like normal calibre throughout with the exception of where the aneurysm was a dilatation.
Q. In your answer you just said that vasospasm could be transient?
A. Yes.
Q. And, therefore, Mr. Singh conceivably could have had vasospasm, and at some point in this study did not have vasospasm?
MR. OETHEIMER: Objection.
A. Anybody could have vasospasm and not have it at some other point, including Mr. Singh. But I don't see any reason why he would have had

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vasospasm.
Q. At what point?
A. At any point in his course with the exception of later on during the course of his subarachnoid hemorrhage when we know that vasospasm is a sequelae of that condition. Usually, it occurs three, five, seven, ten days after the subarachnoid hemorrhage.
It's a response of the vessels to, presumably, some irritants in the blood products of the subarachnoid hemorrhage. So he may have had it, more likely than not, had it at some point later on after the subarachnoid hemorrhage.
Q. Is vasospasm associated with a rupture of aneurysm?
MR. OETHEIMER: Objection.
A. Again, in the sense that I just described, it's associated with the rupture of the aneurysm as of late, typically late development due to the subarachnoid hemorrhage, due to the subarachnoid blood.
Q. Can vasospasm cause the rupture of a hemorrhage?
MR. OETHEIMER: Objection.

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A. Can I tell the cause of the rupture of a hemorrhage?
Q. A saccular hemorrhage as we have in this case?
A. Not to my knowledge.
Q. Number five, "Mr. Singh has testified in his deposition that he didn't take Herbalife on May 10, the day of his stroke; therefore, given the relatively short half-life of ephedra, no possibility that any hypothesized high blood pressure increase potentially due to the Herbalife product was precipitant of the aneurismal rupture and subarachnoid hemorrhage that he suffered that morning." Is that still your opinion today?
A. Yes, it is.
Q. Number six states, "It is, therefore, my opinion based on the best available scientific evidence that Mr. Singh's use of Herbalife played no causative role in these events and was unrelated to his aneurysm rupture and subarachnoid hemorrhage." Is that still your opinion today?
A. Yes, it is.
Q. What is your understanding of his smoking history?

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A. My understanding, which he testified to, that he was smoking approximately a pack a day of cigarettes since about the age of 20 or so.
Q. As part of your report, have you listed medical journal articles that support your position that his stroke was caused by smoking?
A. I've referenced a number of articles that support the overwhelming evidence that the smoking is the strongest perspective for subarachnoid hemorrhage for an aneurysm rupture.
Q. Are there any other sources of information on which you base your opinion that you haven't already told us about?
A. I'm not sure I understand.
Q. With regard to smoking, for supporting your opinion?
A. I only cited a few articles which are mostly review articles. There's an overwhelming -- I didn't say every single article that discusses the evidence regarding cigarette smoking and subarachnoid hemorrhage, because there are likely to be hundreds of them.
But the ones that I have cited are essentially review articles, what I consider to be

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some of the best ones that have the link between smoking and subarachnoid hemorrhage.
Q. Do you believe that smoking can cause an aneurysm to form?
A. I think it can predispose to aneurysm formation.
Q. What does that mean?
A. I think it has an effect that it weakens the arterial wall, in which case, when you have a weakened arterial wall, that's the precondition you need for an aneurysm to form anywhere in the body, but in this case in the brain.
Q. What does a normal wall consist of?

A. Well, there are three layers, essentially three layers. The arterial wall being the outer layer, the intima and there's an intima, kind of, medial layer which is made mostly of muscle and an outer adventitia layer.
Q. Which layer or layers does smoking affect?
A. It's not entirely clear what the mechanism is that smoking affects the arterial wall. But as I've noted in my report, one postulated mechanism which is the most widely cited is that smoking may interfere with the balancing between proteolytic,

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P-R-O-T-O-E-L-Y-T-I-C, enzymes which are mainly elastase and another one called alpha-one antitrypsin.
So if that's the case, then smoking either potentially increases the activity of alpha-one -- I'm sorry, decreases the activity of alpha-one or increasing the activity of elastase, and elastase weakens the arterial wall by degenerating proteins in the wall and connected tissue.
Q. You stated earlier that this connection is not entirely clear. What did you mean by that?
A. Well, there's good evidence for it in experimental models where people have investigated what potential affect smoking could have on aneurysm growth and development.
It hasn't been proven in the sense that in the condition of humans, aneurysm growth and rupture is a more difficult problem, because it's a more difficult thing to study. There's overwhelming epidemiologic evidence that smoking is associated with subarachnoid hemorrhage, but there's not been as much study of direct vessel wall analysis so that aneurysms in smokers that would establish it

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conclusively, but there's pretty good evidence for it.
Q. As far as the epidemiological evidence, have you provided your support for that contention in your references?
A. Yes, as I've already mentioned, there's hundreds of articles that make that association, I've listed a few which I've referenced in the report, and if you want the specific numbers --
Q. No.
A. -- they are here.
Q. * As we sit here today, are there others that you haven't discussed with us that you find were important?
MR. OETHEIMER: Before you answer, you can answer, but he said several times that some of these are review articles, which means they themselves, you know, are synthesized and citing numerous other studies which are actually the clinical work.
So, I mean, when you say other than the ones here, other than these articles and whatever articles are basically cited and discussed as review articles?

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MR. RHEINGOLD: That's fair.

Q. I was waiting for an answer.
A. Oh, I'm sorry, what was the question?
MR. RHEINGOLD: Could you read that back.

(Court reporter read back the requested materials.)

A. I think that the systematic review articles I've listed as well some of the primary data are the best ones. And the systematic review articles contain references that support the risk of smoking related to subarachnoid hemorrhage and aneurysm rupture.
In other words, if I list an article with the systematic review, within that systematic review article there will be multiple references supporting the association that smoking is a very strong risk factor for subarachnoid hemorrhage.
Q. Do you have any opinion yourself with regard to epidemiological evidence that -- strike that.
Did any of these articles discuss the risk of hemorrhagic stroke associated with smoking

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which maybe chronic, but smoking didn't occur on the day of the stroke?
A. Could you say that again?
Q. Do you have any opinion on whether the chances of someone having a hemorrhagic stroke are increased or decreased by not smoking on the day this stroke happens?
A. I think if someone has a history of cigarette smoking, I don't think it makes any difference whether they smoke on the day of the stroke. I don't think it has any important bearing on the issue.
Q. Are there any of your citations that deal with that specific issue?
A. Yes, I think so. It may not be directly, but let me take a look at this report again. It's entirely possible that some of the review articles discuss potential things that might precipitate an aneurysm rupture in someone who has an aneurysm. Meaning that aneurysm is ready to rupture and then some event occurs and smoking has been looked at in some reports, whether I've cited them here specifically, I'm not sure. Let me just take a look.

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So, yeah, Number 25, Triggers of Subarachnoid Hemorrhage: Role of Physical Excursion, Smoking and Alcohol and the Australasian Cooperative Research on Subarachnoid Study (across)." So that particular article has looked at it.
Q. I want to clarify some things that are in your report and your testimony today with regard to the creation of the aneurysm and Mr. Singh and its connection to cigarette smoking.
I believe your summary opinion number two says that the formation was directly attributable to it, but you've also said in your testimony and in this report that it predisposed

him. Do you see a difference between the word "predispose" and "directly attributable to the formation"?

MR. OETHEIMER: Objection.

A. I think that cigarette smoking -- let's put it this way, if he hadn't been a smoker, I don't think he would have had this aneurysm, or the aneurysm rupture. If you don't have a predisposed weakening of the arterial wall, then the aneurysm is not going to form. So in the sense that smoking,

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presumably, weakens the arterial wall, that is what you need to have an aneurysm form. Then it either forms or it doesn't form. But smoking is the inciting event that leaves the aneurysm forming in many or most cases of smokers.

Q. And I believe you testified earlier that you don't know if he was born with this aneurysm or not?

MR. OETHEIMER: Objection.

A. I have no way of knowing. But I think that unlike 30 or 40 years ago when it was generally thought that aneurysms are congenital, it's now thought that most of these bifurcation aneurysms that lead to subarachnoid hemorrhage are probably acquired lesions. They are not there at birth, they are acquired because of the risk factor of smoking, hypertension, alcohol, et cetera.

Q. What's your basis for that statement that now there's a belief that it's acquired as opposed to congenital.

A. Well, I think the experts in the field believe that, and, in particular, call your attention to reference seven, "Pathogenesis, natural history and treatment of unruptured intracranial

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aneurysms," which was published in the Mayo Clinic proceedings in 2004.

So if the experts believe it and Dr. Weabers (phonetic) who's the lead author on that report who's probably the premiere expert on subarachnoid hemorrhage and aneurysm rupture in the world, or certainly one of them, if that's his opinion, I think that's also my opinion.

Q. And your opinion is based on the medical records you reviewed and your review of the literature, not that you have any definitive knowledge with regard to Mr. Singh, whether that aneurysm was there congenitally or acquired?

A. Again, there's no way of knowing whether it was congenitally or acquired unless you were there at birth and had an angiogram to show whether it was there or not.

Q. Other than the smoking, do you have any opinions with a reasonable degree of medical certainty that there are other risk factors at work in Mr. Singh for the rupture of an aneurysm?

A. It's possible because he may have had fibro-muscular dysplasia. That there was a factor leading to the growth and rupture of the aneurysm.

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I don't hold that as central to my opinion because I'm not sure he actually had

fibro-muscular dysplasia; however, if he did have it, and Dr. Zablew thought he had it then, it's another thing that can cause a weakening of the arterial wall and can lead to aneurysms at an increased rate compared to the population that does not have fibro-muscular dysplasia.

Q. I'd like to parse out what your opinion is from your independent investigation. I'd like to parse that out from what Dr. Zablew believes, because I think you're misquoting what Zablew says, but we can get into that.

So do you have an opinion independent of what he said?

MR. OETHEIMER: About?

Q. About whether FMD existed?

A. No, the only evidence I have is his interpretation of the angiogram.

Q. Are you personally able to arrive at a diagnoses of dysplasia from you personally looking at the angiogram?

MR. OETHEIMER: Again, of the fibro-muscular dysplasia?

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MR. RHEINGOLD: Actually now I am just saying dysplasia.

Q. I think what Dr. Zablew said, and I may be wrong, is that he thought there was some dysplasia, and from that he made a conclusion that it was fibro-muscular dysplasia, not because -- are there many types of dysplasia?

A. Dysplasia is sort of a generic, non-specific term which means there's something wrong visibly with the vessel, it doesn't look right.

Q. More specifically what's fibro-muscular dysplasia?

A. Exactly what fibro-muscular dysplasia is isn't really known. The pathogenesis of that condition is unclear. It may be partially genetic because some people have deficiency of alpha-one antitrypsin which can lead to overactivity of the elastase and weakening of the arterial wall, similar to what we think happens with smoking.

It may be a response in some cases to injury of the vessel, some other non-specific brain injury. It's not really clear what exactly it is. So, the diagnosis depends on visualizing abnormal

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arterial segments.

Often times what you do if you really want to make a diagnosis is look at the renal arteries, the arteries that go to the kidneys, with an arteriogram because that's one of the more common locations. If you saw it there, you can make the clinical diagnosis.

Of course, there was no reason in this case to do an arteriogram of the renal arteries, so we don't know what they look like in Mr. Singh.

Q. Do you need actual visualization of the artery in order to definitively diagnose dysplasia?

MR. OETHEIMER: Objection.

A. If you're talking about an artery, you

need some image of it, either a pathology specimen, or arteriogram, MRI, angiography, something.
Q. In your opinion angiography is enough to diagnose dysplasia?
A. To diagnose dysplasia, which means an abnormal appearance of an artery, yes.
Q. Did you diagnose the cause of the dysplasia through an angiogram?
MR. OETHEIMER: Objection.

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A. Only in the context of clinical experience, which is what I think Dr. Zablew was doing. He said there was a dysplastic appearance at this vessel. In my experience, this is overwhelmingly, whatever word he used, most often due to fibro-muscular dysplasia; that was the basis of his conclusion.
But I believe he did say it was a non-specific appearance and there are other potential things that can look like that.
Q. Now, let's try to come back to where I think I started this. Do you have an opinion, aside from Dr. Zablew, of whether dysplasia was present in Mr. Singh?
A. Looking at his angiogram as Dr. Zablew, there's irregular appearance of the internal corroded artery on the left side, the cervical portion before it enters the skull. I see that, so, yes, I think it was dysplastic.
Q. Do you have an opinion whether the area where the rupture occurred was dysplastic?
A. Only in the sense that there was an aneurysm present intracranially inside the head at the bifurcation of the left internal corroded

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artery. But we don't normally refer to that as dysplasia, we call that an aneurysm.
Q. Was the dysplasia that you viewed in the cervical area something that continued to where the bifurcation was?
A. No, I think there was a relatively normal segment in between. It didn't continue intracranially, it stopped before the vessel entered the skull.
Q. Can dysplasia, which is cervical and not intracranial, cause an intracranial aneurysm to rupture?
A. One would have to postulate that there was dysplasia near the site of the aneurysm which lead to the formation of the aneurysm. Once the aneurysm had formed, then you wouldn't see the appearance that is characteristic of fibro-muscular dysplasia, you would see the aneurysm.
So, typically, with fibro-muscular dysplasia there may just be one, but there's often more than one affected arterial segment which can be in the vessels that are outside the skull. It could be in the renal arteries, the vessels inside the skull, there may be more than one location.

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Q. Did you personally find dysplasia intracranially other than the area of the aneurysm?
A. No, the aneurysm was present and easy to

see. Other than the aneurysm, the rest of the vessels appeared intracranially, the rest of the vessels looked normal.
Q. And neither did Dr. Zablew find dysplasia intracranially?
A. That's my understanding of his report, yes.
Q. So, as we sit here today, you cannot say within a reasonable degree of medical certainty that fibro-muscular dysplasia played a role in causing the aneurysm to develop and eventually rupture?
A. What I can say is he may have had fibro-muscular dysplasia, it's possible, but it's not certain. If he did have it, it could have played a role in the aneurysm formation and rupture.
Q. It's possible he had it. He may have had it. But you can't testify that he probably had it?
MR. OETHEIMER: Objection.
A. I don't think I would say he probably had it. I'd say he possibly had it.
MR. RHEINGOLD: Does anyone need a break?

MR. OETHEIMER: We're good.
A. I'm good.
Q. What is the sercavian (phonetic) variation of arterial pressure?
A. Well, arterial pressure in the body varies from moment to moment and also in response to activity or lack of activity, it changes with sleep, changes with the awake state. So there's a natural variation in blood pressure which ordinarily is a bit higher in the morning and during the daytime with activity than it is at night. That's a normal pattern that's seen with most normal individuals.
Q. When you say a bit higher, can you be more specific?
A. I don't know the precise measurements, you know, five, 10, 15-millimeters of mercury higher. More than that in people who have wider variations. It's as you might expect with most things, some people have very small variations others have larger.
Q. You state here that it was reported the stroke onset was around 9:00 a.m. What is your basis for that information?
A. Well, I think the medical records, but

certainly the patient's deposition testimony indicates he fell around that time in the bathroom.
Q. Would that be in the window of what you call the sarcanian variation of blood pressure being elevated in the morning?
A. Yes, he's awake, it's in the morning, certainly that would be one of the times of day when blood pressure is generally higher than it is at other times due to the sarcanian variation.
Q. Would that still apply if it was 10:00 a.m.? Is that considered morning as you're using it?
A. I think so, morning up to noon. But, in general, daytime is higher than nighttime for blood pressure.
Q. Do you know if on May 10 before he had the

stroke he was doing any physical exercise?
A. I am not aware that he was doing any physical exercise. I don't recall any testimony that he was doing physical exercise.
Q. Or that he was involved in any sexual activity?
A. Not that I am aware of.
Q. Or involved in any straining?

A. Other than the fact that he was in the bathroom and very often people commonly have a bowel movement in the morning or urinate in the morning which requires an increase and intrathoracic pressure or straining. It is certainly possible, but I don't have any recollection of direct testimony about that.
Q. On page four the second full paragraph starts off, "The precise cause of intracranially aneurysms and the factors leading to aneurismal growth and rupture are poorly understood." What's your basis for that statement?
A. Again, I've got references here, so I think my basis for that statement comes from the available scientific literature. We just don't understand precisely how these things happen.
Q. What is your understanding of your use of factors? What factors, not in Singh, but just in general, lead to aneurysm growth?
A. Well, I've some already which are the proteolytic enzymes, the elastase, alpha-one antitrypsin activity. There are certainly risk factors that we are discussing today and that are well-established, cigarette smoking, we are talking

in general terms now, hypertension are the two most important risk factors.
There's a whole host of other things alcohol, excessive alcohol use, congenital conditions. Down below on the next paragraph on page four, "fibro-muscular dysplasia, Marfan (phonetic) syndrome, Ehlers-Danlos syndrome. So there's numerous potential factors and many well-established risk factors.
Q. Do you have a definition for excessive alcohol use?
A. Generally in the studies that have been done, once you get past three or four drinks of alcohol a day and you're in the range of four, five, six, that's a risk factor of various kinds of stroke including intracerebral hemorrhage, subarachnoid hemorrhage, ischemic stroke.
Q. Do you have any opinion today as to whether Mr. Singh used alcohol excessively?
A. According to his testimony he used alcohol in the range of one or two drinks a day, which if that's correct, that's not excessive. On the other hand, we clinically -- since medical school, people often under report how much alcohol they drink. One

of the clinical pearls you learn very early is that you should take whatever number you're given in terms of alcohol consumption and double it as a more realistic summary of what people actually drink.

However, I don't have any firm basis to conclude that he drinks more than he states.
Q. You just discussed on page four congenital problems. Do you have any opinion whether Mr. Singh had a brain arterial veinous malformation?
A. My opinion is he did not have that. He had a fairly extensive angiographic study that didn't show one. So I don't think he had one.
Q. Is there any evidence that he had the Ehlers-Danlos syndrome type four?
A. No evidence that I know of.
Q. Any evidence he had Morfan syndrome?
A. No evidence.
Q. Any evidence he had polycystic kidney disease?
A. As far as I know, his kidneys weren't evaluated by any kind of imaging study. So we don't have any evidence about that.
Q. Are you aware he had any family history of any type of strokes?

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A. My recollection, which may not be perfect, is that he reported he did not have any family history of stroke.
Q. I am not sure this is a phrase you used in your report, or I got it someone else, but something called environmental factors.
MR. OETHEIMER: I think there is a reference where he discusses the smoking.
Q. To you does environmental factors mean something like smoking and alcohol, or are we talking about in the air floating around?
MR. OETHEIMER: The reference is found on the bottom of page three.
A. I think it could be anything in this environment. It's a pretty non-specific term.
Q. Are you aware of anything in his environment that may have led to the stroke that we haven't already discussed?
A. Other than his inhaling cigarette smoking, no.
MR. OETHEIMER: Can we take a couple minutes now?
MR. RHEINGOLD: I think that's a good idea because I am going to get into the ephedra, and

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then that should be pretty much it.

(Off the record.)

Q. On page four of your report the last paragraph starts off by saying, "While not established, some authors have postulated that a sudden transient increase in arterial pressure may trigger aneurysm rupture in a proportion of patients." Do you believe that -- strike that.
Do you have any opinion as to why Mr. Singh's aneurysm ruptured when it did?
A. My opinion is that his aneurysm had reached a size where it could not longer contain the ordinary, day-to-day, minute-to-minute pulsations of the arterial vessel and, therefore, it ruptured because the wall was too weak.

Why did it happen at that point in time versus some other point in time? I don't know. But the arteries are continuously pulsating 60, 70, 80 times a minute in response to the constriction and dilation of the heart. So there's an increase in systolic pressure when the heart constricts and pumps and then there's a decrease down to the

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diastaltic which is why blood pressure is given in two numbers.

Obviously, the arteries are a moving vessel whether it's in the head or in the wrist where you can feel your pulse, it's a dynamic structure and it's constantly under stress. And I think at a certain point in time aneurysms get to be too large or too weak and they rupture under that stress.

Q. The top of page five you have a paragraph it starts, "There's no convincing scientific evidence that ephedra increases the risk conditions suffered by Mr. Singh, that is aneurysm formation, aneurysm rupture or hemorrhagic stroke including subarachnoid hemorrhage, intracerebral hemorrhage." What's the difference between subarachnoid hemorrhage and intracerebral hemorrhage?

A. Subarachnoid hemorrhage is bleeding into the subarachnoid space that surrounds the brain and also surrounds the spinal cord. But typically a subarachnoid happens in a location where there are major arteries that are branching or bifurcating and the aneurysm forms and then ruptures in that space. So it's essentially outside the brain tissue itself.

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Whereas, an intracerebral hemorrhage is a rupture of an arterial vessel, can be veinous in some cases, but generally an arterial vessel that ruptures within the (inaudible) of the brain and the substance of the brain. And those are typically not due to conventional Berry aneurysms. They are due to some other process which may be aneurismal or maybe just weakening of the vessel wall.

Q. Was Mr. Singh's aneurysm in the subarachnoid space?

MR. OETHEIMER: Was it, was the question?

MR. RHEINGOLD: Yes.

A. Yes, it was.

Q. Did he have an intracerebral hemorrhage?

A. His primary stroke, at least based on the first CT scan report and the subsequent report, was subarachnoid hemorrhage. There was some intracerebral blood seen on subsequent scans. I think most of that, if not all of it, was along the course of the ventriculostomy catheter that was placed in the right side of the brain to relieve pressure. The catheter has to go through brain tissue to get to the ventricles, and when it does, there can be ancillary bleeding, which was what was

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seen.

Q. You refer in that sentence to convincing scientific evidence, what's that mean?

A. Well, I think it's self-explanatory, but it means there is, in my opinion, no good evidence

that ephedra is linked to any of these conditions. In fact, the best evidence we have suggests there's no associate with increased risk of hemorrhagic stroke.

Q. What's the best evidence that you're aware of that supports that opinion?

A. Well, one of the largest studies was, I think I've got it referenced as number 29. "The Morgan Stern study use of ephedra-containing products and risk for hemorrhagic stroke," published in neurology in 2003. As I state in my report, the finding, the main finding was that the use of ephedra at any dose was not associated with any significant increased risk of hemorrhagic stroke. In fact, the odds ratio 1.00.

Q. Does that study involve them breaking down subjects based on the amount of ephedra alkaloids they had taken?

A. Yes, they did, I guess you could call it a

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subgroup analysis based on the dose of ephedra alkaloids.

Q. What subgroups did they have based on dose?

A. I think there were just two. I think there was something like greater than or equal to 32-milligram and other group where it was less than 32-milligrams. I'm not sure if that dose was per day or per dose. I'd have to go back and look at the original article to be sure about that, but that's my recollection.

Q. Do you know if they have had any findings that were distinctly different between the two groups?

A. The odds ratio and the lowest dosage group was extremely low, suggesting that, if anything, there was a trend towards a decrease risk of stroke, like .13, but it was not statistically significant. Likewise, that higher dosage group had an odds ratio that was on the order of 3.something, if I'm remembering correctly. But, again the finding was not statistically significant, meaning it may have been due to chance alone based on those on the lower side went below one.

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Q. It says, "Rather, the best scientific evidence suggests that ephedra is not associated with an increased risk of hemorrhagic stroke. This observation is supported by a large case-control study that investigated the association between ephedra alkaloids and adverse vascular affects. That's the Morgan Stern study you were just talking about?

A. Yes, it is.

Q. As you understand it, was the alleged connection between ephedra alkaloids and their causing of subarachnoid hemorrhages?

MR. OETHEIMER: Objection.

A. A number of alleged mechanisms have been postulated. One is that -- and I don't believe any of these -- but one is that ephedra alkaloids could somehow increase blood pressure, cause hypertension, which we know is a risk factor for subarachnoid

hemorrhage. That's probably the main one.
The other that was addressed in this case by the plaintiff's expert was the possibility that ephedra might somehow cause vasoconstriction and/or vasospasm and that that would then lead to, if I am remembering correctly, changes in blood

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flow, turbulent blood flow, that could weaken arterial wall and then lead to aneurysm formation and growth and eventual rupture, which I think is, essentially, speculation.
Q. Why do you think that's speculation?
A. It is speculation. There's no real scientific evidence to show that linkage is important in the mechanism of subarachnoid hemorrhage or aneurysm development.
Q. Have you researched that in order to arrive at that opinion?
A. There are, again, case reports that show patients who have had ingestion of ephedra products and at some point in their course have had subarachnoid hemorrhage, I believe those things can be and are in fact most likely coincidental so they don't support cause and effect relationship.
As I mentioned in the report. I don't have any evidence that has shown where the use of ephedra alone can cause vasoconstriction and vasospasm and subsequent aneurysm formation, rupture and subarachnoid hemorrhage.
I think it's all based on a series of sort of the house of cards, this could happen, and

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that could happen, and the next thing could happen, it sounds plausible in the face of it, but there's just no evidence to support it.
Q. Not talking about ephedra, but just hypertension in general, could that lead to a hemorrhagic stroke?
A. We think hypertension is an important risk factor for hemorrhagic stroke.
Q. Do you know what the connection is that's postulated?
A. Between hypertension --
Q. And rupture of --
A. Well, there's a number of connections. One, the most important one, probably, is that hypertension is increased stress on the vascular system. When it's higher than normal, the body isn't prepared for that. Over the long run the arterial wall weakens.
Hypertension is also a major factor in development of arthrosclerosis which can also lead to arterial dysplasia and changes, vasculopathy, if you'd like as a general term. So it can cause either hemorrhagic or ischemic stroke.
Q. Is acute hypertension associated with

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hemorrhagic can stroke?
A. Well, it depends what you mean by acute I think people who have a sudden, severe increases in blood pressure are probably predisposed to hemorrhagic stroke.
Q. How would you define severe? Is there a

certain level to the blood pressure, or is it some other --
A. Really depends on the individual. If someone has a relatively normal pressure to begin with, once you get into the range of blood pressure over -- and by normal I mean a systolic of 120 or less, and you get to the range of blood pressure that are over 200, 220, 240, that's certainly severe as an acute event.
Q. Do you have an opinion as to whether ephedra alkaloids can raise someone's blood pressure?
MR. OETHEIMER: Objection.
A. Yes, my opinion is that it's never been convincingly demonstrated that ephedra alkaloids alone have any clinically important association with increased blood pressure, whether it's acute or chronic.

Q. Do you have any opinion whether ephedra alkaloids can cause increased cardiac output?
MR. OETHEIMER: Objection.
A. I have not looked at that as a specific outcome of ephedra. I think it's possible, but I don't know the data as well as I do for stroke.
Q. Do you have any opinion as to whether ephedra alkaloids can cause an increase in heart rate?
MR. OETHEIMER: Objection.
A. My answer would be the same. I think it's possible they could cause an increase in heart rate. But I'm not aware of the data as well as I am for blood pressure.
Q. That they can cause?
A. It's possible.
Q. And to what extent?
MR. OETHEIMER: Objection.
A. I don't know to what extent. I don't know what the data is regarding how high, if any, if there's any significant effect on heart rate.
Q. In your opinion is there any amount of ephedra alkaloids that would increase someone's blood pressure?

A. Well, there may be, but I haven't seen any studies that have actually shown any specifying amount that's linked to an increase in blood pressure.
Q. Is it biologically plausible that ephedra would increase a user's blood pressure?
A. It's biologically plausible, yes.
Q. Why is that?
A. We, ephedra is similar to other compounds that can interact with receptors that cause smooth muscle constriction in vessels which, in turn, all other things being equal, can increase blood pressure.
Q. On page five the second full paragraph it says, "There's no evidence that the ephedra alkaloids in the Herbalife product Mr. Singh took caused clinically important hypertension or vasospasm or vasoconstriction, nor is there any evidence that Mr. Singh had any of these conditions

prior to his stroke on May 10, 2003."
When you say the ephedra alkaloids and the Herbalife product, are those the alkaloids we talked about earlier?
A. Yes, they are.

Q. When you write the sentence, does this take into account the milligrams of ephedra alkaloids?
A. Which sentence now?
Q. Well, I can just ask generally, you have the opinion that the ephedra did not cause Mr. Singh's stroke; is that correct?
A. That's correct.
Q. Would that opinion change if he took a larger dose of Herbalife?
MR. OETHEIMER: Objection.
A. Well, I have a speculation, but no, I don't think it would change. Because I don't know of any evidence that any dose of ephedra has been established to cause an important increase in blood pressure. When I say that, I mean ephedra as an individual, sole agent, not in conjunction with other things.
Q. Have there been case reports of ephedra users who have had hemorrhage strokes?
A. Yes, there have.
Q. Have you reviewed any of those?
A. I'm sure I did in the past, yes.
Q. Do you think in this specific situation

with ephedra and hemorrhagic strokes, do you find them to have any weight at all in your opinion?
MR. OETHEIMER: Objection.
You can answer.
A. In this specific case, I don't think they have any weight. In general, I think case reports are useful for generating a hypothesis, but they don't establish anything in terms of causation.
Q. Why don't you think they prove anything with regard to causation?
A. Because they could be purely coincidence as in every case report, somebody takes something and a bad event happens to them, were the two related? Well, they could be, but they could also just be coincidence. Especially with regard to a thing like subarachnoid hemorrhage where the aneurysm is just sitting there waiting to rupture, and the time of rupture is uncertain and unpredictable.
Q. What was the size of the aneurysm?
A. Mr. Singh's aneurysm?
Q. Yes.
A. I said it in my report, but I think it was something like 7.3-millimeters by 4-millimeters.

I've seen various numbers in different reports. I wrote down 7.0 times 5.4-millimeters as the size.
Q. Is the size of his aneurysm in any way significant with your opinions?
MR. OETHEIMER: Objection.
You can answer.
A. Any aneurysm could rupture, presumably.

Especially these bifurcation aneurysms. But the risk of rupture goes up as size increases and 7-millimeters is certainly a size where rupture is quite frequent.

Q. The fact that they are quite frequent at 7-millimeters, what is that based on?

A. A number of studies that I've looked at aneurysm size and rupture. The best of them -- I don't know if I have it referenced here or not. But there was a large trial a few years ago, actually two of them, that have looked at size and 7-millimeters was thought to be an important size for aneurysms to become quite risky for rupture.

Q. With regard to the Chinese patients you had that reported a history of ephedra use, were you treating any of them for strokes?

A. I am sure I was, because I was the stroke

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fellow at the time in New England Medical Center, and then I was obviously on staff there full-time from 1999 to 2004 and still there part-time since. So, the answer is yes. I can't recall any details of that.

Q. Did the knowledge of their use of ephedra come into play with your diagnosis at all?

MR. OETHEIMER: When you say ephedra, I understand there's no --

MR. RHEINGOLD: Of Ma Huang, talking about Chinese Ma Huang.

A. When you say -- sorry, could you restate the question again?

Q. Did you diagnose any of those patients as having strokes caused by their use of Ma Huang?

A. No, I did not.

Q. Why is that?

A. As far as I can recall, I don't recall any specific cases, I don't recall ever making a diagnosis of a stroke due to Ma Huang. Usually patients have hypertension, cigarette smoking, all those things are pretty common in the Chinese population, and other risk factors that are very often untreated.

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Q. Have you had any patients with hemorrhagic strokes where they had no risk factors, but were using Ma Huang?

A. None that I can recall. In fact, I don't think I can recall even in my clinical experience ever seeing a patient with subarachnoid hemorrhage who did not have one of the usual risk factors either alcohol abuse, cigarette smoking, hypertension. I'm sure it happens sometimes, but I haven't seen one myself.

Q. Do you know how Herbalife arrived at the conclusion that one Original Green tablet had 7-milligrams of ephedra alkaloids?

A. No, I don't know how they arrived at that conclusion.

Q. Do you know if that's an accurate measurement for each pill?

MR. OETHEIMER: Objection.

A. Well, all medicines in general have variations in the actual content of the active

ingredient. You know, prescription medication is allowed to vary by a percentage from pill to pill. I'm sure the same thing is true for supplemental medications, how much it varies, I don't know.

There have been some studies -- I can't recall any specifics -- where people have looked at that and found five, 10, 15 percent variation.

Q. Now, that question I asked was with regard to ephedra alkaloids all together. Do you know there's any variation in the pills with regard to each specific alkaloid?

A. You mean from one pill to the next pill?

Q. Yes.

A. My answer is I don't know specifically. I wouldn't be surprised if there was some small variation from one to the other of the various alkaloids that make up ephedra.

Q. Why wouldn't that surprise you?

MR. OETHEIMER: Objection.

A. Just a natural variation in the product and the plant source of the medications.

MR. RHEINGOLD: Let me take a few minutes to go through things and see if I'm done.

(Off the record.)

Q. Your C.V. has membership to three professional societies, the American Academy of Neurology, the Boston Stroke Society and the American Stroke Association; is that correct?

A. Yes.

Q. Do you know if any of those groups have any published opinions about their positions on ephedra?

A. What was the second one there?

Q. Boston Stroke Society?

A. I'm sure they don't have any published opinion about it. And the first one?

Q. American Academy of Neurology?

A. When you say published positions, I know the American Academy of Neurology puts out guidelines and practice parameters all the time about all kinds of things, including stroke risk reduction and stroke treatment and care.

Whether there's something in there about ephedra or ephedra alkaloids, it's possible, but I don't recall anything that comes to mind. And I'm sorry, the third one was?

Q. American Stroke Association?

A. Again, they usually put out joint statements with the American Academy of Neurology regarding stroke prevention care, so the same statement would apply.

Q. Are you aware of a Dr. Bray, B-R-A-Y, who has material posted on UpToDate?

A. I don't know Dr. Bray.

Q. From Louisiana?

A. No.

Q. With regard to cases you've reviewed for

Herbalife, have any of those involved injury other than stroke?
A. Not from my perspective.
Q. Have you given any opinions that the stroke was caused by the ephedra in the Herbalife product?
A. No.
Q. Do you think you would ever give an opinion that a stroke was caused by ephedra?
MR. OETHEIMER: Objection.
A. Not based on my current knowledge of the medical literature.
Q. Have you ever been asked in any way to render an opinion with regard to Mr. Singh's current physical disabilities and future disabilities?
A. I've not been asked to.

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Q. Have you been asked in any way to render an opinion on his medical care at St. Vincent's?
A. No, I've not.
Q. With regard to Exhibits 3 and 4, these are both entitled "Singh notes." When were these -- under what circumstances were these made?
A. I think what happened was when I started to look at the medical records I jot things down on the computer now, I used to do it all with handwriting, but now it's not a good idea.
So I jot them down on the computer so I can go back and read them logically when it comes time to produce the reports that I have important information at my fingertips rather than having to go through one of those huge binders.
So while I'm looking at depositions, reports, whatever it is, I'll make some notes here to myself to have sort of a handle on the case.
Q. How did you decide what was to be written down?
A. I sort of approach it just like I would any patient I'm seeing in a clinic or in the hospital: What are the facts? What are the findings of different studies. What was the course

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or progression of the hospital course? And, essentially, if I think it's of potential interest, I put it down here.
Q. And we talked just briefly before about you drafting Exhibit 2, you're expert report, and then arriving at a final report. We talked about you having, I believe, discussions with Mr. Oetheimer during the draft reports; is that correct?
A. Yes.
Q. What did these discussion entail?
A. The bulk of the discussion with this particular report was that we wanted to make it so that it was case specific rather than sort of general. So we entered a few phrases here and there in various locations to do that. If you want me to, I can probably identify some of those, I'm not sure I remember them all.
But, generally, I do the report, Mr. Oetheimer looks at it and I might have to modify a few small phrases or make some minor modifications.

Q. Do you know why he asked for those modifications?
A. Because -- I'm not sure I got the legal terms right here, but, in general, there was a judge who had taken out portions of a report, one was my report because it was applying to general causation rather than the specifics of the case.
Q. Other than that, did Mr. Oetheimer request any changes?
A. No subjective changes that I can recall.
Q. I'm sure he liked your opinions.
MR. RHEINGOLD: That's all I have.
MR. OETHEIMER: Before you go, we'll still make 1:00, but I wanted to clarify one thing.

EXAMINATION BY MR.OETHEIMER:

Q. Dr. Dashe, you were asked questions earlier by Mr. Rheingold regarding congenital versus the sort of evolving, I guess if you will, learned or knowledge -- sort of nature versus nurturer in this context, the congenital versus acquired origination of aneurysms; do you recall that?
A. Yes, I do.
Q. And you have -- in your report, you used the term, you refer to at some points about formation of aneurysms. And Mr. Rheingold asked you some questions about your views with respect to smoking as a risk factor for formation of aneurysms; do you recall that?
A. Yes.
Q. Why don't I, just as a threshold, ask you something different. But what is your view as to the role of cigarette smoking as it relates to formation of aneurysms?
A. Well, again, I think that smoking could cause aneurysms to form denovo from a weakening of the arterial wall. I think that's one possibility.
Q. There are also congenital Berry aneurysms that are, as you said, they are from birth, correct?
A. Yes.
Q. And you do not know -- there's no way to tell whether Mr. Singh had a congenital aneurysm; is that right?
A. That's correct, there's no definitive way to know that.
Q. You also in your report, and I'll refer you to page four, you say the precise cause of intracranial aneurysms and the factors leading to aneurysmal growth and rupture are poorly understood, correct?
A. Yes.
Q. So I want to focus now because I'm not sure there's been testimony on the subject of aneurismal growth. Do aneurysms, when they form, whether congenitally or acquired, are in the prone to grow?
A. Yes, we believe they are, yes.
Q. Are there risk factors for growth of aneurysms?

A. I think they are the same ones I've already mentioned, smoking, hypertension, probably alcohol, and others.
Q. Is that true that those are risk factors for growth of aneurysm, does that hold true for both congenital and acquired aneurysms?
A. As best we know, I think that's true. Because, again, you can't tell when the aneurysm is there. You can't tell whether it was congenital or acquired in most cases. So people have aneurysms that rupture, we believe the same risk factors apply to the growth and to the rupture.
Q. As they grow, what are the implications of growth.
A. As the aneurysms grow the arterial wall

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expands and becomes weaker, they become stronger and the artery wall actually may rupture.
Q. Is smoking a risk factor for rupture of a congenital aneurysm as well as an acquired aneurysm?
A. To the best of my knowledge, it is, yes. And the same forces would be at work in either condition.
Q. Does your opinion that smoking, that is history of cigarette smoking of 20 years or more at one pack per day, was the most important risk factor for rupture of Mr. Singh's aneurysm and his resulting subarachnoid hemorrhage depend in any way on answering the question whether his aneurysm was congenital or acquired?
A. No, it doesn't.
Q. Basically, the same factors are at work in either, whether it was congenital or acquired?
A. To the best of our knowledge, congenital may imply there is also some additional process at work which makes it's more likely to rupture.
Q. But whether his aneurysm was congenital or acquired, is it your opinion that smoking, his smoke habit, was the most important, was the cause of the rupture of his aneurysm and his resulting

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subarachnoid hemorrhage and stroke?
A. In this case, yes, I believe that's true.
MR. OETHEIMER: Nothing further.
MR. RHEINGOLD: No.
(Deposition concluded at 1:00 p.m.)

I, Kathryn K. Gianno, Notary Public, do hereby certify that JOHN FRANCIS DASHE, M.D. appeared before me, satisfactorily identified themself on the 12TH day of APRIL, 2007, at BOSTON, MASSACHUSETTS, and was by me duly sworn to testify to the truth and nothing but the truth as to HIS knowledge touching and concerning the matters in controversy in this cause; that the deponent was thereupon examined upon HIS oath, and said examination reduced to writing by me; and that the statement is a true record of the testimony given by the deponent, to the best of my knowledge and ability.

I further certify that I am neither attorney nor counsel for, nor related to, nor employed by any of the parties to the action in which this testimony was taken. Further, I am not a relative or employee of any attorney of record in this cause, nor do I have a financial interest in this action.

Given under my hand and seal of office on this the _____ day of _____, 2007.

_____

Kathryn K. Gianno
Shorthand Reporter

My Commission expires:
March 12, 2010

Date: May 1, 2007
To: Richard A. Oetheimer, Esq.
Copied to: David B. Rheingold, Esq.
From: Kathryn K. Gianno
Deposition of: John Francis Dashe, M.D.
Taken: April 12, 2007
Action: SINGH vs. HERBAL LIFE

Enclosed is a copy of the deposition of JOHN FRANCIS DASHE, M.D., taken on APRIL 12, 2007, in the above-entitled action.

The deponent has thirty days to sign the deposition from the date of its submission to the deponent, which is the above date.

Have the deponent sign the enclosed signature page. Any errors should be marked by page, line and error on the enclosed correction sheet, and forwarded to all interested parties. Please do not mark the transcript itself.

Thank you for your cooperation.

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

* *
IN RE: EPHEDRA PRODUCTS LIABILITY LITIGATION *
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Pertains to: *
Harbir Singh v. Herbalife International *
Communications, Inc. et al. *
* *

I, JOHN FRANCIS DASHE, M.D., do hereby certify, under the pains and penalties of perjury, that the foregoing testimony is true and accurate, to the best of my knowledge and belief.

WITNESS MY HAND, this day of , 2007.

_____

JOHN FRANCIS DASHE, M.D.

CORRECTION SHEET

DATE TAKEN: APRIL 12, 2007
CASE: IN RE: SINGH V HERBAL LIFE
DEPONENT: JOHN FRANCIS DASHE, M.D.

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Page/Line/Correction and Reason

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